

BRIEF TECHNICAL REPORT

A BRIEF REVIEW OF CLASSROOM GROUP-ORIENTED CONTINGENCIES

Within the last few years, studies in the classroom have extended the application of operant-conditioning techniques from managing the behavior of individuals to the behavioral management of the whole class. This extension has been necessary for two reasons: (a) economic feasibility and practicality and (b) utilization of the peer group in controlling and enhancing classroom behavior.

Economic Feasibility and Practicality

Quay, Werry, McQueen, and Sprague (1966) pointed out that the economics of public schools require the development of behavior-remediation techniques that will allow children to be managed by as few adults as possible. They consider behavior-change techniques developed on an individual basis to be economically unfeasible. Hall, Lund, and Jackson (1968) suggested that it would be more practical and effective to place direct control of classroom attention in the hands of the teacher by using group contingencies. Bushell, Wrobel, and Michaelis (1968) stated that in most situations, individually scheduled contingencies for the responses of each group member are not practical. Bushell *et al.* (1968) proposed that uniform criteria be designed for group settings according to which a number of individuals are to be rewarded or punished. Wasik (1970) pointed out that the application of behavior modification techniques to an individual's behavior can become prohibitively expensive, especially in those social settings where it is necessary to plan for many individuals; she suggested that the simultaneous arrangement of selected environmental contingencies for a group of individuals could lower the cost per individual of applying behavior-modification techniques. In demonstrating that group reinforcement was as effective as individual reinforcement, Herman and Tramontana (1971) tentatively concluded that a group reinforcement procedure would be more efficient than individual reinforcement procedures in classrooms and other group settings in that "it is much easier to dispense one reinforcer to the class than to dispense one to each class member [p. 118]".

Utilization of the Peer Group

Sulzbacher and Houser (1968) noted that a unique advantage of applying contingencies to an entire

group for the deviant behavior of an individual is the removal of the social consequences reinforcing the deviant behavior. Minuchin, Chamberlain, and Graubard (1967) obtained evidence indicating that with disturbed delinquents, rewards and teaching coming from peers are more effective than rewards and teaching associated with authority figures such as teachers. Graubard (1969) stated that in the battle between peer and school values, the delinquent group "must consciously legitimize learning so that the individuals in the group do not have to concern themselves with loss of status for learning [p. 271]". In her work with low-achieving adolescent Hawaiian boys, Sloggett (1971) cited evidence by Gallimore and Howard (1968) indicating that Hawaiians are motivated primarily by peer pressure, affiliation, and avoidance of social disapproval. Sloggett (1971) further cited an example in which Hawaiian school children refused to accept material rewards such as cokes or candy for high grades or successful competition unless the rewards could be shared with their friends. In order to increase the classroom productivity of low-achieving Hawaiian adolescent boys, Sloggett (1971) developed a program in which teams successfully utilized the natural pressures of peer groups "rather than force the boys into the mold of an educational system that typically emphasized competition and individual achievement [p. 64]". Hamblin, Hathaway, and Wodarski (1971) reported data indicating that certain group reinforcement contingencies accelerate learning more than individual reinforcement. In addition, they reported that the accelerated learning rates are byproducts of an increase in spontaneous peer tutoring, maximally occurring under low-performance group contingencies. Hamblin *et al.* (1971) consequently suggested that spontaneous peer tutoring may be used as a teaching procedure in designing a classroom learning environment to accelerate learning.

CATEGORIZATION OF CLASSROOM GROUP-ORIENTED CONTINGENCIES

In the research literature, the term "group contingencies" has generally been used to connote the application of operant techniques to the group behavior management of children in the classroom. However, the use of this term is erroneous if one takes the view that a group does not perform; individuals

within the group perform. Consequently, it may be more precise to describe group behavioral management techniques in terms of "group-oriented contingencies". In reviewing the research literature, it has become evident that group-oriented contingencies can be categorized into at least three types: dependent, independent, and interdependent group-oriented contingency systems.¹

1. Dependent Group-Oriented Contingency Systems

Such a contingency system is established when the same response contingencies are simultaneously in effect for all group members, but are applied only to the performances of one or more selected group members. It is the performance of the selected group members that results in consequences for the whole group. An example of this type of contingency system would be to make free-time activities for the entire class contingent upon the class's poorest math student being able to complete successfully 20 of 30 arithmetic problems. Failure to achieve this level of performance would result in no class member receiving free-time activities. Consequently, the remaining class members are dependent on the selected class member's performance for the stated consequences. This type of contingency system indirectly controls the behavior of the group, in that the group members increase the probability of receiving favorable consequences contingent on aiding the one or more members to emit the appropriate behaviors.

The dependent group-oriented contingency system has been basically used in classrooms where peer influence is brought to bear on a class member's deficient social or academic performance. The utilization of peer groups has aided in modifying the behavior of a hyperactive child (Patterson, 1965; Patterson, Jones, Whittier, and Wright, 1965), in increasing the popularity of children (Alden, Pettigrew, and Skiba, 1970), in modifying off-task behavior (Ascare and Axelrod, 1973; Coleman, 1970; Feldman, 1973; Greenberg and O'Donnell, 1972; Kubany, Weiss, and Sloggett, 1971; Wolf, Hanley, King, Lachowicz, and Giles, 1970), in accelerating academic progress (Cocalis, 1972; Evans and Oswalt, 1967), and in maintaining appropriate social and academic behavior (Walker and Buckley, 1972) when a student's performance earned reinforcement for himself and his classroom peers.

2. Independent Group-Oriented Contingency Systems

Such a contingency system is established when the same response contingencies are simultaneously in effect for all group members, but are applied to performances on an individual basis. An example of this type of contingency system would be making free-time activities for each class member contingent upon each class member being able to complete successfully 20 of 30 arithmetic problems. Those class members who fail to achieve this level of performance would not be allowed free-time activities. Con-

sequently, in this type of contingency system, each member's outcomes are not affected by (independent of) the performances of the other group members.

The independent group-oriented contingency system has been extensively applied in special-education classrooms and less extensively in regular public school classrooms, using at least three types of reinforcement procedures. For example, based on Premack's principle of reinforcement, the arrangement of free-time or special activities contingent upon the individual behaviors of all students in a classroom has been reported to increase desirable classroom behavior (Homme, deBaca, Devine, Steinhurst, and Rickert, 1963; Osborne, 1969; Wasik, 1970) and to improve academic performance (Hopkins, Schutte, and Garton, 1971; Lovitt, Guppy, and Blattner, 1969). Likewise, making teacher attention contingent upon the individual behaviors of all students in a classroom has been reported to increase the rate of study behavior (Hall, Panyon, Rabon, and Broden, 1968; Kazdin and Klock, 1973), to decrease the rate of disruptive behavior (Hall, Fox, Willard, Goldsmith, Emerson, Owen, Davis, and Porcia, 1971; Madsen, Becker, Thomas, Koser, and Plager, 1968; McAllister, Stachowiak, Baer, and Conderman, 1969), and to increase the rate of following instructions (Schutte and Hopkins, 1970). Finally, the use of individually administered token reinforcers for whole classes has been reported to increase the rate of study behavior and academic performance (Bednar, Zelhart, Greathouse, and Weinberg, 1970; Bijou, Birnbrauer, Kidder, and Tague, 1966; Birnbrauer, Bijou, Wolf, and Kidder, 1965; Birnbrauer and Lawler, 1964; Bushell, Wrobel, and Michaelis, 1968; Chadwick and Day, 1971; Clark, Lachowicz, and Wolf, 1968; Ferritor, Buckholdt, Hamblin, and Smith, 1972; Glynn, 1970; Haring and Hauck, 1969; Hewett, Taylor, and Artuso, 1967; Knapczyk and Livingston, 1973; McIntire, Davis, and Pumroy, 1970; McKenzie, Clark, Wolf, Kothers, and Benson, 1968; McLaughlin and Malaby, 1972a; Nolen, Kunzelmann, and Haring, 1967; Wolf *et al.*, 1970; Wolf, Giles, and Hall, 1968; Zimmerman, Zimmerman, and Russell, 1969) and to decrease the rate of disruptive behavior (Ayllon and Roberts, 1974; Broden, Hall, Dunlap, and Clark, 1970; Drabman, 1973; Drabman, Spitalnik, and O'Leary, 1973; Kuypers, Becker, and O'Leary, 1968; Martin, Burkholder, Rosenthal, Tharp, and Thorne, 1968; McLaughlin and Malaby, 1972b; Meichenbaum, Bowers, and Ross, 1968; O'Leary and Becker, 1967; O'Leary, Becker, Evans,

¹This categorization is the result of ideas contained in A. Bandura's (1969, p. 280) review of the social organizational applications of reinforcement contingencies and more specifically by his concept of interdependent contingency systems. The assignment of cited studies to the three categories has been made by the authors, requiring a substitution of the authors' terminology for the various studies' terminology.

and Saudargas, 1969; Quay, Werry, McQueen, and Sprague, 1966; Ringer, 1973).

3. *Interdependent Group-Oriented Contingency Systems*

Such a contingency system is established when the same response contingencies are simultaneously in effect for all group members, but are applied to a level of group performance. An example would be making free-time activities for the entire class contingent upon each student successfully completing 20 of 30 arithmetic problems. Failure to achieve this level of performance by the class would result in *no* class member receiving the free-time activities. Consequently, in this type of contingency system each member's outcomes depend (are interdependent) upon a level of group performance. Three types of group performance levels have been used. The most common has involved the performance of the group as a whole, meeting a set criterion level (Eleftherios, Shoudt, and Strang, 1972; Kock and Breyer, 1974; McNamara, 1971; Packard, 1970; Schmidt and Ulrich, 1969; Sulzbacher and Houser, 1968; Wilson and Williams, 1973). Another level of group performance has been the averaging of (a) all performances, (b) high performances, or (c) low performances (Hamblin *et al.*, 1971). A final type of group performance level has focused either on a single, randomly selected performance or on the single highest or lowest performance in the group (Drabman, Spitalnik, and Spitalnik, 1974).

Of the three types of group-oriented contingency systems, the interdependent group-oriented contingency system has received the most recent empirical evaluation in the classroom setting. Basically two types of groupings have been reported in the literature dealing with interdependent group-oriented contingency systems. Some studies have focused on the whole class as the group (Andrews, 1970; Dietz and Repp, 1973; Eleftherios, Shoudt, and Strang, 1972; Gallagher, Sulzbacher, and Shores, 1967; Glynn, Thomas, and Shee, 1973; Graubard, 1969; Graubard, Lanier, Weisert, and Miller, 1970; Hall, Fox, Willard, Goldsmith, Emerson, Owen, Davis, and Porcia, 1971; Hall, Panyan, Rabon, and Broden, 1968; Hotchkiss, 1966; Jacobs, 1970; McNamara, 1971; Packard, 1970; Prentice, 1970; Schmidt and Ulrich, 1969; Sulzbacher and Houser, 1968; Turknett, 1971; Walker and Hops, 1973; Willis and Crowder, 1972; Wilson, 1971; Wilson and Hopkins, 1973). Other studies have focused on dividing the class into small groups or teams that are either competitive (Barrish, Saunders, and Wolf, 1969; Maloney and Hopkins, 1973; Robertshaw and Hiebert, 1973) or noncompetitive (Harris and Sherman, 1973; Koch and Breyer, 1974; Medland and Stachnik, 1972; Quesenberry, 1971; Simmons and Wasik, 1973; Sloggett, 1971; Wilson and Williams, 1973; Witte, 1971).

Various types of techniques have been used in

implementing interdependent group-oriented contingency systems, including: (a) positive reinforcement techniques for appropriate behavior, whereby the group earns food (Prentice, 1970), money (Hotchkiss, 1966; Turknett, 1971), grades (Witte, 1971), free time (Andrews, 1970; Glynn, Thomas, and Shee, 1973; Levin, 1971; Lovitt, Guppy, and Blattner, 1968; Willis and Crowder, 1972; Wilson, 1971), or tokens (Drabman, Spitalnik, and Spitalnik, 1974; Graubard, Lanier, Weisert, and Miller, 1970; Hamblin *et al.*, 1971; Herman and Tramontana, 1971; Koch and Breyer, 1974; Maloney and Hopkins, 1973; McNamara, 1971; Packard, 1970; Robertshaw and Hiebert, 1973; Walker and Hops, 1973); (b) positive reinforcement techniques for appropriate behavior and response-cost techniques for inappropriate techniques, whereby the group both earns and loses free-time or special activities (Eleftherios, Shoudt, and Strang, 1972; Jacobs, 1970; Schmidt and Ulrich, 1969; Simmons and Wasik, 1973; Wilson and Williams, 1973); (c) response-cost techniques for inappropriate behavior, whereby the group loses tokens (Axelrod, 1973), or free-time activities (Gallagher, Sulzbacher, and Shores, 1967; Hall, Panyan, Rabon, and Broden, 1968; Long and Williams, 1973); (d) differential reinforcement of low responding rates (DRL schedules), whereby the group earns free time when the number of inappropriate responses in a specified time period is below or equal to a set criterion level (Barrish, Saunders, and Wolf, 1969; Dietz and Repp, 1973; Grandy, Madsen, and De Merseman, 1973; Hall, Fox, Willard, Goldsmith, Emerson, Owen, Davis, and Porcia, 1971; Harris and Sherman, 1973; Medland and Stachnik, 1972). In addition, several studies have reported individual reinforcement techniques that have been concurrently utilized with interdependent group-oriented contingency systems (Graubard, 1969; Graubard, Lanier, Weisert, and Miller, 1970; Hamblin *et al.*, 1971; Jacobs, 1970; Schmidt and Ulrich, 1969; Walker and Hops, 1973; Wodarski, Hamblin, Buckholdt, and Ferritor, 1972).

RELATIVE EFFECTIVENESS

An empirical question may be raised concerning the relative effectiveness among the three types of group-oriented contingency systems in managing the behaviors of entire classes. No studies have explicitly assessed the amount of classroom control exerted by the implementation of dependent group-oriented contingencies. Studies in this area have focused only on the effects of the dependent group-oriented contingency on the performance of one or more target members of the class. However, it would appear reasonable to hypothesize that the dependent group-oriented contingency system exerts the least control over an entire class, in that this system indirectly controls classroom behavior, whereas the other two systems directly control classroom behavior.

Fourteen studies have compared the relative effectiveness of independent group-oriented contingency systems *versus* interdependent group-oriented contingency systems in managing classroom behaviors. Seven studies have reported no significant differences in relative effectiveness between the two types of contingency systems (Axelrod, 1973; Drabman, Spitalnik, and Spitalnik, 1974; Grandy, Madsen, and De Mersseman, 1973; Herman and Tramontana, 1971; Levin, 1971; Prentice, 1970; Turknett, 1971). Six studies have reported that the interdependent group-oriented contingency system proved to be more effective than the independent group-oriented contingency system (Graubard, Lanier, Weisert, and Miller, 1970; Hamblin *et al.*, 1971; Jacobs, 1970; Long and Williams, 1973; McNamara, 1971; Witte, 1971). Finally, one study reported that the independent group-oriented contingency system was more successful than the interdependent group-oriented contingency system (Ruppert, 1971).

If further studies can empirically demonstrate that interdependent group-oriented contingency systems are as effective as individual contingencies and independent group-oriented contingency systems, the applied behavior scientist will have an array of techniques that are practical, effective, and cognizant of peer-group pressures in the classroom setting. More widespread use of interdependent group-oriented contingency systems will be seen as advances in behavioral technology offer devices for monitoring classroom behavior and for regulating this system of group-oriented contingencies in the classroom.

FURTHER EVALUATION

Although the application of classroom group-oriented contingencies (especially interdependent group-oriented contingencies) appears to be increasing, certain precautions need to be emphasized. O'Leary and Drabman (1971) urged caution in initiating group-oriented contingencies because of:

(a) the possibility that a particular child cannot perform the requisite behavior; (b) the resulting possibility of undue pressure on a particular individual; and (c) the possibility that one or two children may find it reinforcing to subvert the program or "beat the system" [p. 390].

The dangers in implementing group-oriented contingencies indicate the need for further research to determine their limitations. There is a definite need for further experimental analysis in deriving functional relationships between group-oriented contingencies and various classroom parameters, such as class size or type of academic curriculum. However, researchers should not view the authors' proposed categorization of group-oriented contingencies as restricting the field of inquiry by engaging in a form of theory construction. The purpose of this classification is to induce order in the data. As research in applied behavior analysis proceeds, this tentative classification schema of group-oriented contingencies

will undoubtedly be modified into other functional categories.

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